

Peter HEALEY, *et al.*  
Serial No. 10/594,433  
December 3, 2009

**AMENDMENTS TO THE DRAWINGS:**

Applicants submit concurrently herewith nine (9) sheets of annotated drawings illustrating Figs. 1-4, 5a, 5b, 6a, 6b, 6c, 7a, 7b, 8a, 8b and 9-11 showing proposed changes in red ink, accompanied by nine (9) sheets of formal replacement drawings incorporating the amendments.

Attachments: Replacement Sheets: 9  
Annotated Sheets Showing Changes: 9

**REMARKS/ARGUMENTS**

Reconsideration of this application is respectfully requested.

The Examiner is thanked for the earlier Examiner's Amendment regarding claim 8.

In response to the formality-based objections to claims 5 and 13, these claims have been amended above so as to obviate the stated ground for objection.

In response to the rejection of claim 16 under 35 U.S.C. §112, first paragraph, claim 16 has been amended so as to avoid the use of the word "sense," thus also mooted this ground of rejection.

Other amendments have been made as will be noted to place this application in more traditional U.S. format.

Accordingly, all outstanding formality-based issues are now believed to have been resolved in the applicants' favor.

The rejection of claims 1-2, 8-17, 22 and 24-25 under 35 U.S.C. §102 as allegedly anticipated by Lange '211 is respectfully traversed.

The Examiner's attempt to find correspondence between Lange and applicants' claim 1 is erroneous. For example, the Examiner relies upon paragraph [0032] in Lange to teach transmission of signal copies onto the transmission link to be tested for a time-varying disturbance. However, Lange's paragraph [0032] merely refers to optical fibers

132, 134, 136, 138 which are all located internal to the sensor system 100. This has nothing to do with the “device 150, such as an optical fiber under test” (e.g., see paragraph [0026] of Lange).

Similarly, the Examiner relies upon paragraph [0028] of Lange for a teaching of receipt from the “transmission link” returned signal copy pairs that may have been subjected to time-varying disturbances on the “transmission link.” However, Lange’s paragraph [0028] deals with reflected light from device 150 passing back to the optical portion of sensor 100 to detector 106 which produces a signal indicative of the phase difference between the separate beams “as appropriate.” Actually, the phase difference appears to have been purposefully induced at the site of the sensor 100 via purposeful phase-modulators 116, 118 – rather than through some time-varying disturbance in device 150.

Claim 1 has been amended above in an attempt to even more distinctly differentiate from any possible teaching of Lange.

Lange describes splitting a signal into two copies, phase modulating both signal copies (using phase modulators 118, 116), combining the modulated phase copies using a coupler 120, optionally further delaying the combined modulated signal using a delay loop (124) before sending the combined modulated signal into a device or optical fibre to be tested (150). The combined modulated signal is then reflected (see page 2, paragraph [0028], lines 1 to 4 in Lange).

Page 3, paragraph [0043] of Lange describes in more detail how the Lange sensor functions which makes it even more apparent that the phase modulation in Lange is applied to the signal copies within the sensor which are at a known location.

Claim 1 requires: *"wherein the position of the time-varying disturbance is determined from the time of return of said phase-modulated backscattered components of said returned signal copies."*

Nothing in Lange describes detecting the position of a time-varying disturbance as a result of the phase modulation caused by the time-varying disturbance.

The above-noted distinctions *vis-à-vis* amended claim 1 are also applicable to amended independent claim 22.

Given such fundamental deficiencies of Lange with respect to the independent claims, it is not necessary at this time to detail additional deficiencies of Lange with respect to other aspects of the rejected claims. Suffice it to note that, as a matter of law, it is impossible for a reference to anticipate a claim unless it teaches each and every aspect of that claim.

The rejection of claims 30-32 under 35 U.S.C. §102 as allegedly anticipated by Dallaire '915 is also respectfully traversed.

Dallaire merely teaches apparatus/method for automatically self-guiding an unmanned vehicle along a predefined path using an on-board one-dimensional optical sensor – and light reflective targets placed at intervals along and to one side of such intended path. For example, a car might be caused to drive a certain distance to the left of a dotted center line on a highway or the like.

Contrary to the Examiner's allegation, the Dallaire automatic guidance system does not have any mechanical coupling to the guide track such that movement of the vehicle causes a moving disturbance along an optical fiber or the like. The Examiner relies upon Dallaire at 1:40-2:50, but this merely describes optical tracking of the reflective stripes laid out along a desired path. There is no apparent disturbance to the reflective materials or any other optical device involved in the auto-guidance system therein described. The Examiner apparently equates some temporary loss of "optical contact with the targets" as a moving disturbance along an optical channel. Clearly, as the claims are now amended, there can be no basis whatsoever for reliance upon Dallaire.

For example, absolutely nothing in Dallaire describes the use of a sensing optical signal propagating along an optical fiber mechanically coupled to a track along which a vehicle is moving to determine the position of the vehicle along the track.

Accordingly, there can be no possible anticipation of any of dependent claims 30-32 by Dallaire – and it is unnecessary at this time to discuss additional deficiencies of Dallaire with respect to other aspects of these rejected claims.

The rejection of claim 18 under 35 U.S.C. §103 as allegedly being made “obvious” based on Lange ‘211 is also respectfully traversed.

Fundamental deficiencies of Lange have already been noted above with respect to a parent claim. Accordingly, it is not necessary at this time to detail additional deficiencies of Lange with respect to this ground of rejection.

The rejection of claims 3-4 and 26-29 under 35 U.S.C. §103 as allegedly being made “obvious” based on Lange ‘211 in view of Bryce ‘568 is also respectfully traversed.

Fundamental deficiencies of Lange have already been noted above with respect to parent claim 1. Bryce does not supply those deficiencies.

Nothing in Bryce teaches determining the position of a time-varying disturbance by launching a pair of signal copies along a transmission link from the time of return of backscattered components of said signal copies which have been phase modulated by said time-varying disturbance.

A person of ordinary skill in the art who wanted to determine the position of a time-varying disturbance, and who read Lange, would learn only that if a phase

modulation is applied to an outgoing signal (prior to it being launched into a device whose properties are to be detected), then the signal must be returned somehow from that device. If such a person were to read Bryce in combination with Lange, they would understand that a reflective target could be used which may include an aerosol as a target, which could provide backscattered signals.

However, the concept of using backscattered signals to determine where a time-varying disturbance is located on an optical fibre is still not apparent, as the claimed invention requires the backscattered signals to have been phase modulated by the disturbance – and to be used to determine the location of the disturbance from the return time of backscattered signals (which have been phase modulated by the disturbance either before or after being backscattered).

Accordingly, even if Lange is combined *arguendo* with Bryce, one still does not achieve at least the above-discussed features of applicants' here claimed invention(s). Accordingly, it is not necessary at this time to detail additional deficiencies of this allegedly "obvious" combination of references with respect to other aspects of the rejected claims. Suffice it to note that, as a matter of law, one cannot support even a *prima facie* case of "obviousness" unless the cited prior art teaches or suggests each and every feature of the rejected claim.

The rejection of claims 5-7 under 35 U.S.C. §103 as allegedly being made "obvious" based on Lange in view of Reingang '677 is also respectfully traversed.

Fundamental deficiencies of Lange have already been noted above with respect to parent claim 1. Reingang does not supply those deficiencies. Accordingly, it is not necessary at this time to discuss additional deficiencies of this allegedly “obvious” combination of references with respect to other aspects of the rejected claims – for reasons already noted above.

The rejection of claims 19-21 under 35 U.S.C. §103 as allegedly being made “obvious” based on Lange in view of Dallaire is also respectfully traversed.

Once again, fundamental deficiencies of both Lange and Dallaire have already been noted above with respect to other claims. In particular, both of these references have already explained deficiencies with respect to parent claim 1. Accordingly, it is not necessary at this time to discuss additional deficiencies of this allegedly “obvious” combination of references with respect to other aspects of these rejected claims.

The rejection of claim 23 under 35 U.S.C. §103 as allegedly being made “obvious” based on Lange in view of Sorin ‘791 is also respectfully traversed.

In particular, fundamental deficiencies of Lange have already been noted above with respect to parent claim 22. Sorin does not supply those deficiencies. Accordingly, it is not necessary at this time to detail additional deficiencies of this allegedly “obvious” combination of references with respect to the additional recitations of claim 23. It is



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respectfully noted that under 35 U.S.C. §103, the applicants' claimed invention must be considered "as a whole" – and not attacked in piecemeal hindsight fashion.

Accordingly, this entire application is now believed to be in allowable condition, and a formal notice to that effect is earnestly solicited.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

By:



Larry S. Nixon  
Reg. No. 25,640

LSN:lef

901 North Glebe Road, 11th Floor  
Arlington, VA 22203-1808  
Telephone: (703) 816-4000  
Facsimile: (703) 816-4100